

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
1 August 2002 (01.08.2002)

PCT

(10) International Publication Number  
**WO 02/058508 A3**

(51) International Patent Classification<sup>7</sup>: **A46B 11/00**

MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.

(21) International Application Number: PCT/EP02/00634

(22) International Filing Date: 23 January 2002 (23.01.2002)

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

MI2001U000045 26 January 2001 (26.01.2001) IT

Declaration under Rule 4.17:

— of inventorship (Rule 4.17(iv)) for US only

(71) Applicant and

(72) Inventor: CALLIGARO, Vanni [IT/IT]; Via Durazzo, 5, I-20131 Milano (IT).

Published:

— with international search report  
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(74) Agents: PETRUZZIELLO, Aldo et al.; Racheli & C. S.P.A., Viale San Michele del Carso, 4, I-20144 Milano (IT).

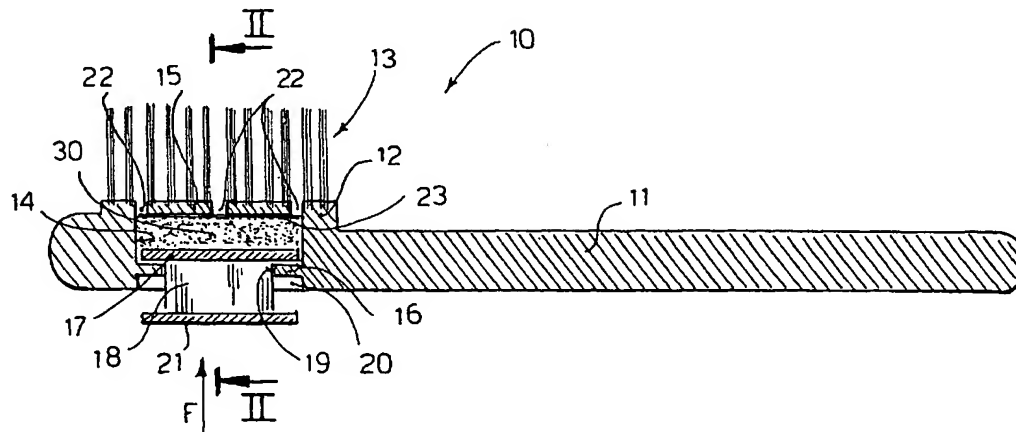
(88) Date of publication of the international search report:

7 November 2002

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: IMPROVED TOOTHBRUSH



(57) Abstract: A toothbrush (10; 100; 200; 300) that includes a head (12; 312) supporting a set of bristles (13), a handle (11; 311) joint to the head (12; 312), a chamber (14; 114; 214; 314) made inside the head (12; 312) and/or inside the handle (11) and containing a dentifrice substance (30), at least one duct (22, 122, 222, 322) that communicates said chamber with the external face of the head (12; 312) supporting the set of bristles, and control means acting inside the chamber to push the dentifrice substance (30) so as to cause its discharge from the ducts to impregnate the set of bristles (13).

WO 02/058508 A3

BEST AVAILABLE COPY

## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP 02/00634

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 A46B11/00

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A46B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3 589 823 A (HENDRICKSON ORRIN W) 29 June 1971 (1971-06-29)	1-5
Y	the whole document	15
Y	US 3 952 867 A (MCCORD WILLIAM F) 27 April 1976 (1976-04-27)	15
Y	the whole document	
X	WO 00 53053 A (SARGENT BRUCE ALAN ; TRI CONCEPTS PROPRIETARY LIMIT (ZA)) 14 September 2000 (2000-09-14)	1-3, 14
A	the whole document	4, 5, 10, 11
X	US 4 844 641 A (GROSFILLEY JEAN-PIERRE ET AL) 4 July 1989 (1989-07-04)	1-3, 14
A	the whole document	4, 5
	--- -/-	



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

\* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*G\* document member of the same patent family

Date of the actual completion of the international search

17 September 2002

Date of mailing of the international search report

26/09/2002

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Triantaphillou, P

## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP 02/00634

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	AT 344 128 B (WASNER KURT A) 10 July 1978 (1978-07-10)	1,2,6-8, 10,11,14
Y	the whole document	15
Y	US 5 702 686 A (CALHOON CHRISTINA M ET AL) 30 December 1997 (1997-12-30)	15
	the whole document	
X	US 4 408 920 A (WALTHER MIKE C ET AL) 11 October 1983 (1983-10-11)	1,2,6-8, 10
A	the whole document	9
X	DE 25 26 640 A (HODUM HORST) 30 December 1976 (1976-12-30)	1,2,6, 10,11
	the whole document	
X	DE 88 03 338 U (HANSEN) 11 May 1988 (1988-05-11)	1,2,6
A	the whole document	7-9
X	US 3 432 245 A (HUDSON VIRGINIA Z) 11 March 1969 (1969-03-11)	1,2,6,12
Y	the whole document	15
A		7,8,13, 14
P,Y	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 24, 11 May 2001 (2001-05-11) & JP 2001 181160 A (MORINAGA MILK IND CO LTD), 3 July 2001 (2001-07-03) abstract	15
X	US 3 148 684 A (KEELER HARRY A) 15 September 1964 (1964-09-15)	1,12
Y	the whole document	13,15
Y	US 2 090 144 A (JOHN GUARDINO ET AL) 17 August 1937 (1937-08-17)	13
A	the whole document	1-3,6
Y	PATENT ABSTRACTS OF JAPAN vol. 013, no. 238 (C-603), 5 June 1989 (1989-06-05) & JP 01 047712 A (TAIYO KAGAKU CO LTD), 22 February 1989 (1989-02-22) abstract	15
X	FR 2 651 102 A (FIZAINE GABRIEL) 1 March 1991 (1991-03-01)	1,12
A	the whole document	13,14
X	FR 2 639 804 A (ACOSTINI SYLVETTE) 8 June 1990 (1990-06-08)	1,12
A	the whole document	13
	---	
	---	

-/-

## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP 02/00634

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 599 126 A (HOUGH CHERYL) 4 February 1997 (1997-02-04)	1,12
A	the whole document ----	13,14
A	FR 2 475 378 A (ZAGOURIS ANTOINE) 14 August 1981 (1981-08-14) the whole document -----	1,12,13

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/EP 02/00634

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-5

Toothbrush with chamber containing dentifrice and piston acting transversely to the brush's long axis for expelling the dentifrice to the bristles.

2. Claims: 1,6-11

Toothbrush with chamber containing dentifrice and piston acting along the brush's long axis for expelling the dentifrice to the bristles.

3. Claims: 1,12,13

Toothbrush with chamber containing dentifrice and flexible bulb whose flexible membrane side is squeezed for expelling the dentifrice to the bristles.

4. Claims: 1,14

Toothbrush with chamber containing dentifrice and device for expelling the dentifrice to the bristles with breakable membrane blocking the passage of the dentifrice.

5. Claims: 1,15

Toothbrush with chamber containing dentifrice and device for expelling the dentifrice to the bristles where the dentifrice is of swallowable composition.

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 02/00634

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 3589823	A	29-06-1971	NONE	
US 3952867	A	27-04-1976	NONE	
WO 0053053	A	14-09-2000	AU 1172400 A CN 1352534 T EP 1164891 A1 WO 0053053 A1	28-09-2000 05-06-2002 02-01-2002 14-09-2000
US 4844641	A	04-07-1989	FR 2602129 A1 AT 64069 T DE 3770537 D1 EP 0255456 A1	05-02-1988 15-06-1991 11-07-1991 03-02-1988
AT 344128	B	10-07-1978	AT 292876 A	15-11-1977
US 5702686	A	30-12-1997	NONE	
US 4408920	A	11-10-1983	NONE	
DE 2526640	A	30-12-1976	DE 2526640 A1	30-12-1976
DE 8803338	U	11-05-1988	DE 8714279 U1 DE 8803338 U1	18-02-1988 11-05-1988
US 3432245	A	11-03-1969	NONE	
JP 2001181160	A	03-07-2001	NONE	
US 3148684	A	15-09-1964	NONE	
US 2090144	A	17-08-1937	NONE	
JP 01047712 0	A		NONE	
FR 2651102	A	01-03-1991	FR 2651102 A1	01-03-1991
FR 2639804	A	08-06-1990	FR 2639804 A1	08-06-1990
US 5599126	A	04-02-1997	NONE	
FR 2475378	A	14-08-1981	FR 2475378 A1	14-08-1981